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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,593	02/12/2002	Ryo Takai	00862.022516	4328

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EXAMINER

LYONS, MICHAEL A

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/073,593

Applicant(s)

TAKAI ET AL.

Examiner

Michael A. Lyons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION***Drawings***

Figures 13 and 14 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: element 29, referred to as a Y mirror in the specification, in Figure 2. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-4, 6, 8, 11-12, and 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Ukaji (6,285,457)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Ukaji (Fig. 2) discloses an interferometer group 33a, 33b, and 33d to measure Z position and displacement in coordination with Z measuring mirror 35 with a reflecting surface parallel to the XY plane of the stage.

As for claims 2 and 4, the interferometer group mentioned with regards to claim 1 contains a plurality of interferometers.

As for claim 3, the coordinate axis of Fig. 2 indicates that rotation and tilt of the stage.

As for claim 6, the interferometers are controlled by control box 30.

As for claim 8, mirror 35 receives light after the light strikes, and is reflected by, mirror 31.

As for claim 11, mirror 31 has at least two surfaces, flat portion 31a and angled portion 31b.

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Regarding claim 12, Ukaji (Figs. 1 and 2) discloses a Y stage 11, an X stage 10 movable with respect to the Y stage, a Z mirror 35, a mirror 31 with a flat face 31a and a angled face 31b to direct light to the Z mirror, and an interferometer group 33a, 33b, and 33d to measure the Z position in conjunction with Z mirror 35 and combination mirror 31.

As for claim 14, mirror 31 reflects light to the Z mirror and to the optical element.

As for claim 15, mirror 31 has at least two surfaces, flat portion 31a and angled portion 31b.

As for claim 16, the mirror is elongated in the X direction.

As for claim 17, the angled portion of the mirror has a surface to reflect light back to the first mirror for use as a reference.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5, 9-10, 13, 18, and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ukaji (6,285,457).

As for claim 5, the switching from one interferometer to another over the course of a measurement as a stage moves is well known.

As for claim 9, the reflection of light perpendicularly on the Z mirror is a matter of design choice.

As for claim 10, the use of four beams, two measuring and two reference, from the interferometers is a matter of design choice.

As for claim 13, the mounting of the interferometer in a particular location is a matter of design choice.

As for claim 18, the practice of overlapping interferometers is well known.

As for claims 24 and 25, the practice of using a computer network and display for communicating and displaying desired information of any sort is well known.

Claims 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ukaji (6,285,457).

Regarding claim 19, Ukaji discloses the exposure apparatus as described above with regard to claim 1. Ukaji also discloses (Fig. 6) an illumination system 1 for illuminating a reticle 2 having a pattern to be transferred to a wafer, a movable stage 10 containing wafer chuck 20 for holding a wafer at top stage 21, and a lens barrel support 4. Ukaji, however, fails to disclose the installation of semiconductor apparatus and the manufacturing of semiconductor devices.

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Both the installation and manufacturing required for semiconductor construction described above is well known, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the installation of the necessary equipment for manufacture of semiconductor wafers in a factory to facilitate the construction of the wafers using the apparatus described above.

As for claims 20 and 21, the use of a computer or computer network to control any device is well known.

Regarding claims 22 and 23, Ukaji discloses the exposure apparatus as described above with regard to claim 1 and 19. However, Ukaji fails to disclose the factory in which the semiconductors are to be constructed, and the use of a computer network for the control of the construction.

Both the use of a factory and the use of a computer network for construction and the control of such construction is well known, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a factory and computer network for the necessary and efficient construction of semiconductor wafers in conjunction with the disclosed exposure apparatus of Ukaji.

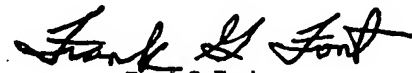
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lyons whose telephone number is 703-305-1933. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G Font can be reached on 703-308-4877. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-0725 for regular communications and 703-308-0725 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0935.

MAL
July 10, 2003



Frank G. Font
Supervisory Patent Examiner
Technology Center 2800